LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

P.G. DEGREE EXAMINATION – **CROSS DISCIPLINARY**

SECOND SEMESTER – **APRIL 2023**

PST2CD01 – STATISTICAL ANALYSIS

Date: 12-05-2023   Dept. No.   Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A – K1 (CO1)

Answer ALL the questions	**(5 x 1 = 5)**
1.	**Answer the following:**
a)	Define additional probability of an event.
b)	Write down the formula for Poisson distribution?
c)	Define t distribution.
d)	Write any two uses of χ^2 - test?
e)	Write down the formula for regression coefficients

SECTION A – K2 (CO1)

Answer ALL the questions		**(5 x 1 = 5)**
2.	**Match the following:**	
a)	Multiplication theorem	-	Equality of variances
b)	Poisson Distribution	-	Goodness of fit
c)	F-test	-	(-1, +1)
d)	χ^2 - test	-	P(A)P(B)
e)	Correlation	-	λ

SECTION B – K3 (CO2)

Answer any THREE of the following	**(3 x 10 = 30)**
3.	A bag contains 4 white and 6 black balls. Two balls are drawn at random. What is the probability that (a) both are white, (b) both are black, (c) one white and one black?
4.	Write down the properties of Normal distribution
5.	Explain two way classification.
6.	Write the advantages and properties of t-test.
7.	Distinguish between correlation and regression.

SECTION C – K4 (CO3)

Answer any TWO of the following **(2 x 12.5 = 25)**

8. From the records of 10 Indian Army corps kept over 20 years, the following data were obtained showing the number of deaths caused by the horse. Calculate the theoretical Poisson frequencies.

No. of Deaths:	0	1	2	3	4	Total
Frequency:	109	65	22	3	1	200

9. A sample of ten house owners is drawn and the following values of their incomes are obtained. Mean Rs. 6,000; standard deviation Rs. 650. Test the hypothesis that the average income of house owners of the town is Rs. 5500.

10. Calculate Pearson's coefficient of correlation for the following data:

Demand (Kg)	85	93	95	105	120	130	150	160
Price(Rs.)	15	18	20	244	30	35	40	50

11. Explain Latin Square Design.

SECTION D – K5 (CO4)

Answer any ONE of the following **(1 x 15 = 15)**

12. Below are given the gains in weights (lbs) of cows fed on two diets X and Y. Gain in weights (in lbs) Test at 5% level, whether the two diets differ as regards their effect on mean increase in weight.

13. Set up ANOVA table for the following per hectare yield for three varieties of wheat, each grown in four plots:

    Also workout F - ratio and test whether there is significant difference among the average yields in the 3 varieties of wheat.

SECTION E – K6 (CO5)

Answer any ONE of the following **(1 x 20 = 20)**

14. The following table gives the aptitude test scores and productivity indices of 10 workers selected at random.

Aptitude scores (X)	60	62	65	70	72	48	53	73	65	82
Productivity index (Y)	68	60	62	80	85	40	52	62	60	81

Find the two regression equations and estimate:

(i) The productivity index of a worker whose test score is 92

   (a) The test score of a worker whose productivity index is 75.

15. Find the area under the standard normal curve which lie (a)to the right of Z = 2.70, (b)to the left of Z = 1.73, (c)to the right of Z = -0.66, (d)between Z = -0.90 and Z = -1.85, (e)between Z = -1.45 and Z = +1.45

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